

Survey of critical thinking and clinical decision making in nursing student of Kerman University

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ABSTRACT

Context: The ability to think critically is an essential element in nursing education and more specifically in nurses' clinical decision making (CDM).

Aims: Critical thinking (CT) and CDM ability as well as their relationship were examined among nursing students of Kerman University.

Settings and Design: Study was designed in four towns: Kerman, Bam, Jiroft, and Zarand, settled in Kerman province.

Materials and Methods: This research was a cross-sectional descriptive correlation study. 300 nursing students with different level of education were asked to fill two questionnaires including: (1) California Critical Thinking Skills Test (CCTST) and (2) Lauri and Salantera (2002) CDM instrument. Statistical Analysis Used: Data were analyzed with SPSS12 and descriptive and inferential statistics.

Results: Nursing students yielded a low score (mean = 5/40 from 20) of CT and a mild score (mean = 12.8 from 20) of CDM. We found positively correlation between male and CT and CDM score with mean score of the nursing student. Also CDM score in male was more than female but not significant, and Jirofts CDM nursing student was significantly better than other city.

Conclusions: Although students that answers evaluation question in CCTST better can gave better CDM score but there isn't relationship between CT and CDM of nursing student. The finding showed that mean score of nursing student CT was low. Reason can be either due to the defects of nursing education program, teaching, and learning strategies.

Key words: Clinical research, decision making, nursing education, nursing students, thinking

INTRODUCTION

Nursing, an essential professional practice discipline, must adapt to meet increasingly complex needs of patients and fill expanding roles in the health care delivery. Nursing has evolved from an occupation to a profession, with skills based on well-developed knowledge. Nurses today have greater autonomy and a growing demand to expand their ability in order to make an effective decision considering client's care needs.^[1] Decisions made by nurses often involve complex problems concerning the physical and psychosocial well-being of client and interaction with other disciplines. As a client's status changes, the nurse must recognize, interpret, and integrate new information and make decision about the course of action to follow. Clinical decision-making requires the early development of an hypothetical diagnosis,

followed by future data collection aimed at supporting or disproving the diagnosis.^[2,3] Meeting clients' outcomes thus need a complex decision making goes hand with critical thinking (CT).^[1,4] The ability to think critically is an essential element of higher education, and more specifically, nursing education.^[2,5] CT is defined by Watson and Glaser (1964) as a composite of attitudes, knowledge, and skill. This composite included: (1) an attitude of inquiry that involves an ability to recognize the existence of problems and an acceptance of the general need for evidence in support of what is asserted to be true; (2) knowledge of the nature of valid inferences, abstractions, and generalization in which the weight or accuracy of different kind of evidence are logically determined; and (3) skill in employing and applying the above attitudes and knowledge.^[6]

CT is an orientation of the mind including both cognitive and affective domains of reasoning and highly influence on individual's abilities to question the assumptions. It is a developed skill of looking for alternative solution of the problems and adopting a questioning approach.^[7]

In 1965, American Nurses Association (ANA) proposed that the baccalaureate degree should be the professional

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degree required for entry into nursing practice as a registered nurse. The ANA stated that the baccalaureate nursing curriculum should be designed in a way that improves the nursing students' CT ability and the synthesis of learning. They need CT to provide effective care while coping with the expansion in role associated with the complexities of current health-care system. CT in nursing education is an essential component of professional accountability and quality nursing care. Nursing students are expected to be able to think critically in order to process complex data and to make intelligent decisions concerning the planning, manage - CT.^[8]

Based on the literature review, numerous factors influence the nursing students' clinical decision making (CDM) process.^[9,10] These factors included individual variables, such as experience and knowledge creative thinking ability, education, and self-concept,^[11] as well as environmental and situational stressors.^[12] These factors may serve to enhance or impede CDM. It may be different among the students in different cultural context as well as different organizational and educational context. This study thus aimed to examine the CT' as well as the CDM' ability of the nursing student in South-East of Iran. It also aimed to determine the variables affects these abilities.

MATERIALS AND METHODS

In order to collect data, an approval was taken from the head of the faculties of nursing prior to the collection of data. The study was carried out based on a descriptive comparative design at four faculties of nursing.

At first, a questionnaire was designed in order to obtain background information which was assumed to have influence on participants' CT and CDM. It was developed based on the experiences of a pretest among students and included questions about gender, age, level of education, and academic performance (measured by grade point).

CT skills were measured with the translated California Critical Thinking Skills Test (CCTST). The scale was translated from English into Farsi by Khodamoradi *et al.* (2005) and Khalili *et al.* (2003).^[9,12] It consist of 34 multiple choice items and measures CT skills in three subscales: inference, evaluation, and analysis, with 1 correct response per question. Scores are obtained by summing the number of correct item responses. The total scale ranges from 0 to 34 points, with subscale scores ranging from 0 to 9 for analysis, 0 to 14 for evaluation, and 0 to 11 for inference.^[13]

To examine the participants' ability of CDM, translated Sirkka Lauri and Sanna Salanterä 2002^[14] questionnaire

was used. The scale consists of 24 items. The instrument is a structured questionnaire with a five-point scale: never, rarely, sometimes, often, and almost always. The items were scored from 1 to 5. Half of the items were designed to measure analytical step-by-step and analytical information-processing decision making. Another half were designed to measure intuitive-processing decision making. These were labeled as items describing intuition decision making. However, every item measured analytical, analytical-intuitive, or intuitive decision making, depending on the nurses' answers. The items were scored from 1 to 5 so that the lowest scores measured analytical step-by-step decision making and the highest scores intuitive decision making.^[14]

Khalili *et al.* (2003)^[12] and Khodamoradi *et al.* (2005)^[9] checked the reliability and validity of translated CCTST. Respectively Khalili reliability total score of the test was $r = 0.62$ and sub-tests ($r = 0.66$) evaluation, ($r = 0.77$) inferred, ($r = 0.66$) inductive reasoning, ($r = 0.73$), and deductive reasoning ($r = 0.74$), Khodamoradi said order $r = 0.86$.

For translation of Lauri and Salanterä (2002)^[14] questionnaire from English into Farsi, the standard forward-backward procedure was applied. Translation of the items and the response categories independently performed by two professional translators and then temporary versions were provided. Afterwards they were back translated into English and after a careful cultural adaptation the final versions were provided. Translated questionnaire went through pilot-testing students ($n = 30$). Suggestions by nursing students were combined into the final questionnaires versions. The scale have originally been developed and tested in cultural contexts which are different from the research contexts, so the validity and reliability of scale rechecked.

To check the validity of test content, we used the viewpoints of Professors of Educational Psychology and Medical Education in three domains including relevance, clarity, and simplicity. Finding showed validity of test was desirable. Reliability of the tools was measured on students ($n = 30$) by internal reliability of subscales and external reliability. The correlation between test-retest' result was 0.90 with Kappa coefficient equal to 0.83. The reliability and validity of scale was thus acceptable.

During spring 2008, the participants at four faculties of nursing were invited to participate. The participation was voluntarily and they were briefed for the purpose of study and procedure in their own language, both verbally and with written information. In order to secure confidentiality, there was no personal information on the questionnaires.

300 sets of questionnaires were distributed with a drop out of 10. In all collected data, 98% of all questions were answered. Statistical Package for Social Scientists (SPSS14) was used to analysis the data including descriptive (percentages, mean score) and inferential statistics (i.e., ANOVA: *t*-test independent sampling _assuming nonequal variances; and Pearson Product Moment Correlation Coefficient). Comparisons were considered significant at the $P < 0.05$.

RESULTS

The findings indicated that the mean age of participants was 21.75 and majority was female (70%). Participants' mean grade of their academic performance was 16.75 (from 20). Of the participants, 34% were in second semester, 32.3% in fourth semester, and 33% in final years. The mean score of CT ability of participants was low (mean = 5.4) and mean score of CDM was medium (12.28 from 20). In both the scales, the lowest mean score (mean score = 2.98 of 20) was belonged to the items that measured the participants' ability to analyze the patients' as well as their own professional's problems. In CCTST, male participants (mean score = 170.75) scored significantly higher than female (mean score = 143.26). Among all the participants those who were studying in Jiroft College of Nursing had higher mean score in CDM ability. According to the Pearson correlation, there was a positive correlation between academic performance of the participants and their mean score of CT [Table 1]. CT (mean score 9/193, SD 2/788) with sub-scales: evaluation (mean score 4/1, SD 1/745), analysis (mean score 2/28, SD1/484), inference (mean score 2/299, SD 1/593), and CDM (mean score 82/95, SD 13/41). No relation was found between the CT and CDM scores of the participants.

DISCUSSION

The purpose of this study was to examine the nursing students' CT and CDM ability as well as the variables influence on these two. The participants yielded a low mean score of CT. This finding is consistent with Salehi *et al.* (2007),^[15] Islami (2003),^[16] and Babamohammadi (2001)^[17] where they found a low mean score of CT among nurses and nursing students around country. This could be related to the participants' educational background or even their cultural and organizational context. Salehi *et al.* (2007) claimed that our country's educational system is based on memorizing the facts and does not encourage the CT skills. They continue that after getting graduated, the occupational environment, also, does not support the development of these skills.^[15] Limited teaching strategies and the learning milieu may be compounding issues in relation to the students' lack of confidence with CT when attempting to solve problems or questions through self-directed learning.^[17-19] The challenge to nursing education is to provide the resources, content, curricular strategies, and opportunities to describe, develop, and practice CT.^[20]

No relationship was found between the mean scores of CT and CDM. The finding is consistent with several studies in which CT skills were found to be unrelated to clinical decision-making skills.^[10,15,21,22] Unlike, other studies found such a correlation between the two skills.^[2,8,10,20,23] According to Duchscher (1999), unable to find a correlation between CDM and CT abilities results from the absence of suitable tools to measure them, rather than a true lack of correlation. He goes on that clear defining of the CDM, CT and evaluation of the validity and practicality of the tool needs further studies.^[24] However, the magnitude of the observed correlation raises serious questions regarding the value of teaching CT in the nurses' school curriculum.^[8]

Table 1: Mean score and standard deviation of critical thinking and clinical decision making with demographic variables

Demographic variables	Critical thinking			Clinical decision making		
	Mean score	SD	P	Mean score	SD	P
Sex						
Male	5/27	1/64	0 / 01	12/16	2/83	0/231*
Female	5/78	1/56		12/61	2/65	
Score average						
Clinical education	16/75	2/35	0/953	16/75	2/35	0/018***
Train1	5/58	1/68		12/28	2/69	
Train2	5/64	1/53		12/36	2/99	
Educational year						
First	5/415	1/744	0/168	12/24	2/57	0/694**
Third	1/618	5/16		2/81	2/92	
Fourth	1/532	5/631		2/98	3/33	
City						
Kerman	5/25	1/63	0/085	11/7	2/91	0/02**
Bam	5/691	1/501		12/41	2/92	
Zarand	5	1/496		12/36	2/28	
Giroft	5/451	1/78		12/92	2/57	

*Man-whitney U.; **Kruskal-Wallis; ***Correlation of Pearson.

In this study, we found that there is significant correlation between sex and CT and male have better CT ability rather than female. In any study don not attention to this factor because most of the subject was female. According to the results, academic performance positively affects CT ability of the participants. This reflects the other studies' finding that CT ability is related to academic performance, measured by grade point average, in Nursing.^[15,18,19,21]

The results indicated male students' higher score of CT than that of female. This is in contrast with the Facione' (1998) report that female scores were higher than male scores in terms of the CT skill of analysis. The possible explanation of the finding is that self-esteem is lower overall for females than males in college.^[13] Undergraduate male students tend to show significantly higher self-esteem than females.^[25] Since self-esteem positively correlated with CT ability,^[11] it can be concluded that male students with higher self-esteem have higher score of CT than female students.

Also Jiroft nursing student had better score in CDM rather than other city. Jiroft students who were studying there reported that they are well educated in practice. They claimed that they have authority and responsibility enough to decide in clinical settings. Autonomy and responsibility are required for independent learning and improvement of CT ability among students.^[26,27]

The challenge to nursing education is to provide the resources, content, curricular strategies, and opportunities to describe, develop, and practice CT. Authors use strategies such as asking questions, working in small groups, role playing, discussion and debate, using case studies, daily notes, simulations, problem solving, concept of mental maps, the learning cycle, computer programs, and recommend rethinking learning. In asking questions, working in small groups is recognized by most scholars. Further research is required to determine whether course work unique to baccalaureate programs actually result in either improved CT skill or improved CDM skills.

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